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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,119	02/27/2002	Ronald S. Cok	82161ATHC	5043

7590

09/22/2005

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EXAMINER

CRUZ, MAGDA

ART UNIT	PAPER NUMBER
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2851

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/084,119

Applicant(s)

COK ET AL.

Examiner

Magda Cruz

Art Unit

2851

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7,11,12,16,17,21 and 23-33 is/are rejected.
- 7) ☒ Claim(s) 2,6,8-10,13-15,18-20 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/27/02 & 6/14/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Examiner's Comment

1. In view of the following prior art, the Allowance mailed on 08/09/2005 is withdrawn and prosecution is reopened.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-4, 11-12, 21, 27 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richard in view of Lewis.

Richard (US Patent Number 5,671,992) discloses:

- Regarding claim 1, an image projector (Figure 2, element 14) including a mirror optical element (Figure 2, elements 60 and 62); a viewer eye position detector (i.e. eye tracking module; column 4, line 16) for generating a signal representing the position of a viewer's eyes relative to the location (column 4, lines 16-19); and a control system (i.e. tracking module) responsive to the signal for providing relative motion between the viewer and the image projector (column 5, lines 34-38).

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- Regarding claim 3, a control system that adjusts the image projector (column 1, lines 62-66).
- Regarding claim 4, the image projector (Figure 3, elements 14 and 16) is adjustable to move the predetermined image location (column 5, lines 65-67).
- Regarding claim 11, the projected image is auto-stereoscopic (column 5, lines 3-5).
- Regarding claim 21, the eye position detector (i.e. eye tracking module; column 4, line 16) includes means for detecting viewer movement towards and away from the projector (column 4, lines 16-19 and 65-67 and column 5, lines 1-5).
- Regarding claim 27, the image display system includes an adjustable frame (Figure 3, element 50) for mounting the image projector (column 7, lines 29-30).
- Regarding claim 32, the control system adjusts the position of the mirror optical element (column 2, lines 3-8).
- Regarding claim 33, the image projector (Figure 3, elements 14 and 16) contains a multiplicity of optical elements and light valves (i.e. means for projecting the image) and the control system (i.e. tracking module) adjusts both the position of the optical elements and the light valves and the position of the mirror optical element independently (column 2, lines 35-39).

Richard teaches the salient features of the present invention as explained above, except (regarding claims 1, 4 and 12) an exit pupil for viewing an image at a viewing location, maintain the viewer's eye at the exit pupil.

Lewis (US Pub. No. 2002/0167462 A1) discloses an exit pupil (Figure 15B, element 456) for viewing an image at a viewing location, maintain the viewer's eye at the exit pupil (page 1, paragraph 0013, lines 1-6 and page 6, claim 12, lines 11-13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to maintain the position of the viewer's eye from Richard's invention at the exit pupil as taught by Lewis for the purpose of having a brightest field of view.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Richard in view of Lewis as applied to claims 1, 3-4, 11-12, 21, 27 and 32-33 above, and further in view of lino.

Richard (US Patent Number 5,671,992) in combination with Lewis (US Pub. No. 2002/0167462 A1) teaches the salient features of the present invention as explained above (see previous Rejection under §103(a)), except a projector that is adjustable to move the predetermined image location in a horizontal and a vertical direction.

lino (US Patent number 4,962,998) discloses a projector that is adjustable to move the predetermined image location in a horizontal and a vertical direction (i.e. the projector is rotatably mounted with a shaft that provides the movement of said projector; column 2, lines 11-18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a projector adjustable to move the predetermined image

location in a horizontal and a vertical direction disclosed by lino in substitution of the projector and the control system from Richard's invention, for the purpose of enabling the user to move in different directions.

5. Claims 16 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richard in view of Lewis as applied to claims 1, 3-4, 11-12, 21, 27 and 32-33 above, and further in view of Lo et al.

Richard (US Patent Number 5,671,992) in combination with Lewis (US Pub. No. 2002/0167462 A1) teaches the salient features of the present invention as explained above (see previous Rejection under §103(a)), except (regarding claim 16) a motion platform including a viewer station and on which the image projector is mounted for imparting a sense of motion to the viewer; and (regarding claim 30) a control system that accommodates for a viewer's height.

Lo et al. (US Patent Number 5,954,508) disclose a motion platform including a viewer station (column 1, lines 24-26) for imparting a sense of motion to the viewer (column 3, lines 39-41), and a control system (i.e. system controller 12 that is connected to the motion simulator 10; column 5, lines 45-48) that accommodates for a viewer's height (column 5, lines 52-54).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the motion platform and control system disclosed by Lo et al. in combination with the control system from Richard's invention, for the purpose of simulating motion for a person playing an interactive computer game or participating in a virtual reality experience.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Richard in view of Lewis as applied to claims 1, 3-4, 11-12, 21, 27 and 32-33 above, and further in view of Toyoshima et al.

Richard (US Patent Number 5,671,992) in combination with Lewis (US Pub. No. 2002/0167462 A1) teaches the salient features of the present invention as explained above (see previous Rejection under §103(a)), except (regarding claim 17) creating a perpetual location of a source of sound and wherein the control system adjusts the perceptual location of sound from the sound system in response to viewer movements.

Toyoshima et al. (US Patent Number 6,011,526) discloses creating a perpetual location of a source of sound (column 11, lines 63-67) and wherein the control system adjusts the perceptual location of sound from the sound system in response to viewer movements (column 2, lines 49-55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the control system that adjust the perpetual location of sound in response to the viewer's movement, for the purpose providing a display apparatus operable in synchronism with a movement of the body a viewer and eliminates a possible displacement between the normal positions of a video image and an audio image.

7. Claims 26 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richard in view of Lewis as applied to claims 1, 3-4, 11-12, 21, 27 and 32-33 above, and further in view of Threlkeld.

Richard (US Patent Number 5,671,992) in combination with Lewis (US Pub. No. 2002/0167462 A1) teaches the salient features of the present invention as explained above (see previous Rejection under §103(a)), except (regarding claim 26) the image projector is adjustable to move the image projector in a horizontal or vertical direction, (regarding claim 28) an adjustable frame movable in a horizontal or vertical direction, and (regarding claim 29) an adjustable frame that is rotatable about one or more axes.

Threlkeld (US Patent Number 3,790,261) discloses an image projector (Figure 1, element 30) is adjustable to move the image projector in a horizontal or vertical direction (column 11, lines 47-48), an adjustable frame (i.e. shaft that is coupled to the projector; Figure 1, element 198; column 11, lines 30-31) movable in a horizontal or vertical direction (column 11, lines 47-48), and an adjustable frame (i.e. shaft that is coupled to the projector; Figure 1, element 198) that is rotatable about one or more axes (i.e. axes of said shaft).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the adjustable frame disclosed by Threlkeld in substitution of the adjustable frame from Richard's invention, for the purpose of aligning the projector with the screen both vertically and horizontally.

8. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richard in view of Lewis as applied to claims 1, 3-4, 11-12, 21, 27 and 32-33 above, and further in view of Kanbayashi.

Richard (US Patent Number 5,671,992) in combination with Lewis (US Pub. No. 2002/0167462 A1) teaches the salient features of the present invention as explained

above (see previous Rejection under §103(a)), except a viewer position detector employing one or more cameras in front of the viewer.

Kanbayashi (JP 10-090592) discloses a viewer position detector (Figure 1, element 7) employing one or more cameras (Figure 1, element 1) in front of the viewer (Figure 1, element 25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the viewer position detector disclosed by Kanbayashi in substitution of the eye track module from Richard's invention, for the purpose of changing the direction of transmitted light depending on the direction of the eyes detected by the eye detector.

9. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Richard in view of Lewis and Kanbayashi as applied to claims 23-25 above, and further in view of Muenich.

Richard (US Patent Number 5,671,992) in combination with Lewis (US Pub. No. 2002/0167462 A1) and Kanbayashi (JP 10-090592) teaches the salient features of the present invention as explained above (see previous Rejection under §103(a)), except one or more cameras mounted on the image projector.

Muench (US Patent Number 5,953,156) discloses one or more cameras (Figure 4, element 46) mounted on the image projector (Figure 4, element 10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to mount a camera on an image projector as shown by Muench, in substitution of the image projector disclosed by Richard and the camera from

Kanbayashi's invention for the purpose of adjusting both relative small and relatively large head movements of the viewer.

Allowable Subject Matter

10. Claims 2, 6, 8-10, 13-15, 18-20 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

- a. Regarding claims 2, 6, 10, 13-15 and 18-20, the prior art of record neither shows nor suggests an image display system including an adjustable rest for positioning a viewer relative to the image projector and the control system adjusts the position of the adjustable rest.
- b. Regarding claims 8 and 9, the prior art of record neither shows nor suggests an image display system wherein the viewer eye position detector includes a light source for emitting non-visible radiation and one or more cameras.
- c. Regarding claim 22, the prior art of record neither shows nor suggests an image display system wherein the means for detecting viewer movement employs triangulation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Magda Cruz whose telephone number is (571) 272-2114. The examiner can normally be reached on Monday through Thursday 8:00-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**JUDY NGUYEN
SUPERVISORY PATENT EXAMINER**

Magda Cruz
Patent Examiner
September 14, 2005